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October 27, 1951

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Hunting Lure

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TECHNOLOGY
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MEDICINE

Birth Control by Chemical

Discover mystery synthetic compound, now being tested on mice, that promises future birth control of the world's population. Further studies needed.

► A MYSTERY chemical which promises future birth control of the world's population, so that the earth will be able to support its people, is under study in a laboratory at New York University.

The existence of this chemical and promising results in preliminary trials with laboratory mice were reported briefly by Dr. Eli D. Goldsmith of the university's college of medicine at a New York Academy of Sciences conference on world population problems and birth control.

Dr. Goldsmith would not state the name of the chemical because of fear that it might be used illicitly and even dangerously before further careful animal studies had established a safe dosage for humans.

When given to mice a few days after they have become pregnant, the chemical prevents the birth of baby mice. The uterus, 21 days after the chemical has been given, shows that there has been a pregnancy, but the fetuses are not there. They have disappeared by the process known as resorption.

The chemical is fed to the mice in a routine laboratory diet. Experiments are

now starting to determine whether the chemical will prevent conception if fed before the mice are inseminated.

Dr. Goldsmith does not know whether the mystery chemical will have the same birth-controlling effect in humans as in mice. Studies with larger animals closer to humans in the evolutionary scale will be needed before human trials are made.

The correct dosage must also be determined, even for laboratory animals. At present Dr. Goldsmith has worked out a dose which has a birth-control effect without killing the mice. But he wants to find the least amount needed for the birth-control effect. Also to be determined is the minimum period the chemical must be taken.

The mystery chemical is a synthetic which has been made only in the last few years. At present it is being tested in humans under carefully controlled conditions for an entirely different purpose. More than this Dr. Goldsmith would not say by way of identification.

Science News Letter, October 27, 1951

PHYSICS

Radiation Sets Life's Stage

► EVIDENCE THAT atomic radiations bombarding the earth in the early stages of the earth's history could have set the stage for the origin of life has been obtained in cyclotron atomic energy experiments.

A team of University of California scientists exposed carbon dioxide water solutions to 40,000,000 electron volt helium ion beams from the 60-inch cyclotron in Berkeley. They found that it is possible to "reduce appreciable quantities of carbon dioxide to formic acid by means of water through the agency of radiation."

This means that before there was any life organic matter could be created. Since one popular and plausible theory is that life originated in the beginning in organic matter, this discovery reinforces this idea.

Radioactively labeled carbon isotope 14 was used in the tests. Formaldehyde as well formic acid, which are basic organic chemicals, were formed in the tests, but by just what chemical path is yet to be determined.

In the youth of the earth it is possible that

cosmic radiation was even more intense than it is now, giving the necessary radiation.

Drs. W. M. Garrison, D. C. Morrison, J. G. Hamilton, A. A. Benson and M. Calvin were the scientific team reporting to the journal SCIENCE (Oct. 19).

Science News Letter, October 27, 1951

MEDICINE

Drug Makes Permanent Abstiners of 50%

► SOME 2,500 alcoholics have gone on the wagon permanently and another 1,250 have made "basic improvement" through treatment with Antabuse, Dr. John Jewell, medical director for Ayerst, McKenna and Harrison, Ltd., stated in New York.

Dr. Jewell's statement covered reports from more than 100 clinics in the United States and Canada on over 5,000 patients. The tests have been going on since 1949 when Ayerst introduced the drug in this country.

Antabuse, termed "the drug that builds a chemical fence around the alcoholic," is now available for general prescription use. Chemically it is known as tetraethylthiuram disulfide. Its anti-alcoholic action was discovered by three Danish scientists, Drs. Erik Jacobsen, Jens Hald and O. Martensen-Larsen.

The drug is taken as a small white tablet to be swallowed. Taken alone in proper dosage it produces no reaction. But if the patient takes even small amounts of alcohol while under Antabuse treatment, he is afflicted by intense flushing, perspiration, difficulty in breathing, palpitation and nausea. The reaction is so unpleasant that the patient stops drinking.

Antabuse is intended for use under close medical supervision. While the patient has this "chemical fence" around him, treatment for his underlying emotional difficulty which led to excessive drinking can be given effectively.

Science News Letter, October 27, 1951

DENTISTRY

Nipple Will Keep Baby's Gums in Line

► A NURSING bottle nipple designed to prevent crooked teeth was shown at the meeting of the American Dental Association in Washington by its inventor, Dr. W. H. Griesinger of Portland, Ore.

The tip is oblong with a somewhat flattened top and bottom, designed to stimulate and widen the dental arch and relieve pressure in the middle of the baby's mouth. A transverse bar puts some stress in the front part of the mouth to help keep the dental arches in correct relation.

A vent on the part of the nipple that goes on the floor of the mouth is intended to prevent baby from swallowing air and to relieve colic.

Science News Letter, October 27, 1951

NATURAL RESOURCES

U. S. Uranium Reports Opened to Prospectors

► URANIUM PROSPECTORS will now have the chance to study reports previously not available on the atomic metal, the Atomic Energy Commission and the U. S. Geological Survey have announced.

The reports cover exploration work done by AEC and the Geological Survey in Arizona, Colorado, Montana, New Mexico and Utah. They can be read at nearly 50 different libraries, Commission offices and Survey offices scattered throughout the country. Information in the reports is for prospectors, mining companies and other persons or organizations interested in looking for and developing uranium deposits.

Results on mineralogical studies are also covered in some of the reports.

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MEDICINE

Nobelist Fights Yellow Jack

America's fighting men as well as millions in Africa and South America can cheer award of 1951 Nobel Prize for Medicine to Dr. Max Theiler.

► AMERICAN SOLDIERS, sailors and Marines of World War II as well as countless millions of men, women and children living in South America and Africa can cheer the award of the Nobel Prize for Medicine this year to Dr. Max Theiler of the Rockefeller Foundation, New York.

For it was Dr. Theiler's research of nearly two decades ago that produced a successful vaccine against yellow fever, once a world-wide scourge and until 1932 a constant danger to persons visiting, living or fighting in tropical regions of those continents.

Among vaccinated American servicemen stationed in Africa and South America, not one known case of yellow fever was reported, thanks to Dr. Theiler.

When Walter Reed, American Army officer, assisted by brave volunteers, proved the role of the mosquito in carrying the disease, it seemed as if the conquest of yellow fever had been made. But it had only begun. Yellow fever was cleaned out of the United States and some other regions by warfare against the stegomyia mosquito that carries it. For another 30 years, it took its deadly toll in other parts

of the world and among the scientists who battled to conquer it.

Until Dr. Theiler's discovery, it had never been possible to give yellow fever to mice, only to monkeys. Efforts to get a strain of the yellow fever virus from monkeys for vaccinating humans were unsuccessful.

Dr. Theiler, then an assistant and later instructor at Harvard Medical School, found that when he injected an irritating substance in the brain of a mouse at the same time that he injected the yellow fever virus, he could produce the disease in the mouse. Passing the mouse virus along from one mouse to another weakened the virus enough so that when given with blood serum from a recovered yellow fever patient, it could safely and effectively be used to vaccinate humans.

Later, Dr. Theiler and associates found a way to make the yellow fever virus grow in chick embryos and for some years this has been the source of material for the vaccine now used in the United States.

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DENTISTRY

Antibiotics Save Abscessed Teeth Formerly Extracted

► MANY A person's two front teeth have been saved by aureomycin and penicillin, Dr. Edward L. Sleeper of Tufts College Dental School, Boston, reported to the American Dental Association meeting in Washington.

The mold drugs are used to clear up infection in cases of abscessed teeth. Practically all such teeth can be saved, no matter how severe the infection, Dr. Sleeper said.

"Many front teeth, in younger individuals especially, have been so loose when acutely involved that they could have been extracted with one's fingers," Dr. Sleeper said.

"Yet, when the infection was under control and the tooth root canal filled and treated, the patient had a functional tooth of his own."

"Pyorrhea" no longer means the patient is doomed shortly to lose all his teeth, as it did 25 years ago, Dr. Harry B. McCarthy of Baltimore reported.

The term then was used for most ailments of mouth tissues and gums and it was widely believed that there was no cure for it.

Dentists now know more about ailments of these tissues, called periodontal tissues, and are equipped to treat them. The attitude of defeatism dentists once had for such ailments is "fast passing out of the picture," Dr. McCarthy said.

"We can safely tell our patients, except those with very advanced periodontal involvement, that we can, with adequate treatment on our part and the proper home care on their part, retain their teeth and supporting tissues in a healthy condition for many years."

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WILDLIFE

Beaver Less Eager, Build Cornstalk Dams

► BEAVERS FAMED for building sturdy dams of aspen, cottonwood, and willow are constructing dams of cornstalks in the prairie counties of southwestern Minnesota. The beavers' whole livelihood comes from the farmers' cornfield. They eat the stalks and ears of corn and surprisingly build their dams of cornstalks. The odd cornstalk dams are holding up well.

"The beavers don't have to work so hard to eat in cornfields as they would in a deciduous tree grove," explains Frank Blair, director of the Minnesota Conservation Department's Game and Fish Division in Worthington. "Like some people, they follow the line of least resistance. They apparently are enjoying their new diet of corn."

"Eager beavers," however, in wooded areas of Minnesota still work hard cutting down trees to feast on the tender, succulent, top bark.

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MYCOLOGY

"Mushrooms" Grown in Fruit Cannery Wastes

► "MUSHROOMS" FOR mushroom soup and other flavoring uses may become a food product of the South, a Southside Chemical Conference in Wilson Dam, Ala., was told. The "mushrooms" would be root-like mycelia grown in waste materials from fruit canning factories. If properly taken care of, mycelia grow up to the familiar full size mushroom, but they have the mushroom flavor when still in the early, root-like stage.

In laboratory liquid farms, mycelia have already been grown successfully on by-products of the citrus industry by a team consisting of S. S. Block, T. W. Stearns, R. L. Stephens and R. F. C. McCandless of the University of Florida. Successful commercial production by this method would mean a cheaper source of "mushrooms" for mushroom soup, since mycelia can be cultivated more quickly.

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NOBELIST THEILER — Dr. Max Theiler of the Rockefeller Foundation has been awarded the 1951 Nobel Prize for Medicine for his part in making yellow fever an almost extinct disease.

BIOCHEMISTRY

Speed Broken Bone Healing

► **BROKEN BONES** can be set faster, the period of pain and discomfort for the patient is shorter and recovery comes sooner when a chemical called hyaluronidase is injected.

The chemical, an enzyme known also as the "spreading factor," permits rapid diffusion of liquids through the body because of its ability to break down hyaluronic acid, an important component in the jelly-like mass which holds cells together in tissue.

In the case of broken bones, it acts to reduce pain and swelling quickly by causing wide dispersion of the edema fluid and the accumulations of blood, seen by the patient as black and blue spots. As a result, a snug fitting cast can be put on at once, instead of after a period of waiting for the swelling to go down.

This and four other medical uses of hyaluronidase are shown in a new medical motion picture produced under the direction of Columbia University College of Physicians and Surgeons, New York, by

Wyeth Incorporated, Philadelphia drug manufacturing house.

Medical studies with patients recounted in the motion picture also show:

1. That hyaluronidase added to irritating drugs such as liver extract, steroids and concentrated vitamin preparations, usually injected intra-muscularly, decreases discomfort and local tissue damage in patients.

2. That hyaluronidase, combined with local anesthetic agents, markedly shortens the time of onset of anesthesia and produces an area of anesthesia roughly three times larger than with the agents alone.

3. That hyaluronidase added to procaine for purposes of blocking the mandibular nerve in oral surgery and dentistry causes the fluid to be diffused almost immediately to the complete circumference of the nerve, thereby shortening the waiting period for complete anesthetic effect.

4. That a ring which acts as a tourniquet about an injured finger may be removed without cutting.

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BIOLOGY

Control Turkey Feathers

► **TURKEYS** WITH fewer or no troublesome pin feathers to fuss with will be on the market if turkey growers follow the advice of poultry specialists.

Drs. C. D. Mueller, L. F. Payne and Fred Moultrie, of the Kansas Agricultural Experiment Station, Manhattan, Kans., have found that the light-hours received by turkeys affect the rate of feather growth and moulting. Previously poultry men have considered the temperature as the most important factor affecting feather growth.

The Kansas poultry specialists recommend that turkeys be raised by providing the same length of day during the summer and early fall as prevails naturally during October and November.

They compared 17- to 28-week old turkeys that had been exposed to natural conditions to those that had been raised at the same temperature but with 10 and 15 hours of light per day and to those that had received a 10-hour light-day at a temperature of 60 degrees Fahrenheit.

The turkeys were later killed and plucked then graded as to the number of pin feathers. Less than 30% of those that had received a natural amount of light and temperature were in the upper four grades for pin feathering.

Of the turkeys that received light limited to 10 hours with natural temperatures, 85% were in the upper four grades. Turkeys exposed to the low temperature showed no improvement over those given natural temperature and shortened days. Light for 15 hours per day put the turkeys in the lower 25% class.

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Question Box

CHEMISTRY

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DENTISTRY

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MARINE BIOLOGY

What could fighting men downed in the North Pacific eat? p. 263.

METEOROLOGY

What is believed the cause of turbulence in the atmosphere? p. 271.

Photographs: Cover, p. 262 and 263, American Museum of Natural History; p. 259, Rockefeller Foundation; p. 261, An'ol Herskovitz.

NATURAL RESOURCES

In what way are deer a threat to our future wood supply? p. 264.

PHYSICS

How have scientists shown that atomic radiations could have set the stage for life's beginnings? p. 258.

PHYSIOLOGY

How do the heart's valves function? p. 261.
On what are stuffy ears now blamed? p. 265.

STATISTICS

Long Lives for Women

Woman's world predicted for one hundred years from now, when most of the little girls born in 1970 will still be living, outlasting men about six years.

► ONE HUNDRED years from now it will be a woman's world. Although even today women generally outlive men, your granddaughter born in 1970 can reasonably expect to live 80 years, while a grandson born in 1970 can look forward to about six years less of life.

Since most of the little girls born in 1970 will not die until more than 100 years from today, the U. S. may well be on the road to domination by moms, aunts, grandmas and great grandmothers, not to mention spinsters.

Women's lives are enough longer than men's so that it "pays to be a woman," states Dr. Harold F. Dorn of the National Institutes of Health, Bethesda, Md. He has just finished figuring out a table of expected length of life for all people in the United States.

Using a different method of prediction, he comes up with forecasts for the death rate that are considerably lower than most previous estimates. They are especially so for white women.

Dr. Dorn got his figures holding the promise of longer life for everyone by separating the U. S. population into four main groups, then calculating the death rate for each group separately. The groupings he used are "white males, white females, nonwhite males and nonwhite females."

A comparison of Dr. Dorn's figures with similar tables for 1929 shows that in the last 22 years the expected life span has jumped nearly 14 years for women, only a little over 9 for men.

His predictions were made for each group separately because the death rates show "rather appreciably" different trends. Dr. Dorn carried his forecast no later than 1970 because he believes that there may be such advances in medicine and surgery in the next 20 years that his calculations for beyond that time would not be valid.

Compared to 1929 figures, the greatest increase in life expectancy—21.9 years—is forecast for Negro women. They are still not expected to live as long as white women, however, since their estimated age of death was considerably lower to begin with. Expected life span for Negro men jumps from the 1929 figure of 47.6 to 66.9 years.

Dr. Dorn makes no prediction as to what will happen to the total population, whether it will gradually increase, stay steady, or start to drop. That, he says, depends on birth rates, not on death rates, which he has figured.

"Mortality during the early years of life already is so low that even a continuation of the relatively large annual rates of decrease which prevail at the present time," he states, "will have only a small effect upon the average longevity of the total population."

Large increases in the average length of life for the whole population can be gained only by lowering the death rates in late adult life, Dr. Dorn finds. After age 50, accidents, cancer and cardio-vascular-renal diseases account for more than two-thirds of all deaths. But these are the fields in which the most progress can be expected during the next 20 years, since diseases caused by poor sanitation and poor public health facilities are already pretty well licked in the U. S.

Previous tables estimating length of life have been "unduly conservative," Dr. Dorn charges. Such tables are used by insurance companies in computing policy rates. And they are used by those who want to estimate the total population of this country, or of the world, at a future date. All kinds of businesses, from hospital bed manufacturers to toy producers, base their business future on predicted trends in the birth and death rates.

Dr. Dorn figured his tables by studying the mortality trends for the period from



HEART IN ACTION—A still shot from the first moving pictures ever to have been taken of the inside of the living heart. Arrow points into mitral valve (dark portion) opening into upper chamber of heart.

1936 to 1948, determining the different causes of death according to age, sex and race. Then he divided each of the four main groups into 18 subgroups according to age, from babies in the under 5 range to oldsters 85 and over. For each of these five-year-interval groupings he then predicted the death rate in 1960 and 1970 for the four main divisions.

Dr. Dorn plans to publish his findings in a forthcoming issue of PUBLIC HEALTH REPORTS. Meanwhile, statistics released by the U. S. Public Health Service show that babies born in the U. S. this year have on the average nearly 68 years of life ahead of them.

The new estimates for average life span, based on final 1949 vital statistics, are a record high. White women are the longest-lived group in the nation, averaging 71.5 years. White men average 65 years and 11 months. Negroes and other non-white groups have a shorter average life, 58.5 years for men and 62 years, 11 months for women.

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PHYSIOLOGY

Movies of Living Heart Show How Valves Function

► NEW KNOWLEDGE of how one of the heart's valves works has been gained by moving pictures. The pictures, first ever taken of the inside of a living heart, were shown at Montefiore Hospital in New York during a clinic session of the New York Academy of Medicine Post-Graduate Fortnight.

The valve, called the mitral valve, separates the upper and lower left chambers of the heart. It is the one most often crippled by rheumatic fever. Previously scientists thought that an intact chamber of the heart and a column of fluid or blood were required for the valve to open.

The color motion picture showed that the valve may function without fluid or blood in the heart, although complete closing requires the presence of fluid in the heart chamber. In the normal intact heart, fluid is always present, so the valve action is both muscular and hydrodynamic.

Operations on the mitral valve must be performed by touch, but study of the motion pictures is expected to give surgeons better knowledge of the valve structure and function and thus lead to improved surgical procedures.

The motion pictures were taken by Antol Herskovitz, the hospital photographer, under the direction of Dr. Elliott S. Hurwitt, chief of the hospital's division of surgery. In order to make the pictures, the animal was supplied with a temporary artificial heart devised by Dr. Adrian Kantrowitz, also of Montefiore Hospital. A grant from the Playtex Park Research Institute helped finance the project.

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ETHNOLOGY

Old Indian Custom—Boo

Present-day Hallowe'en masks look pale when placed beside masks American Indians used to call forth the proper "great spirit" needed for the occasion.

By MARJORIE VAN DE WATER

► THE YOUNG merry-maker who dresses up in a false face on Hallowe'en is following an Indian custom that was old when Columbus first came to these shores.

But the Indians took their masks more seriously than does the Hallowe'en reveler. The Indian masks were believed to give the wearer power to ward off or cure illness. On the other hand they were "poison" when neglected or mistreated in such a manner as to stir resentment of the forces they represent.

Masks are still used in ritual and ceremony by thousands of Indians. Scientific studies have been made of these customs, for they are a part of the earliest American culture. Among the most recent studies were those of the late Dr. Frank C. Speck of the University of Pennsylvania, published by the University Museum.

Even the "trick or treat" custom has its parallel among the Indians. Traditionally, among the Delawares, a feast and dance are given on behalf of the mask spirit. There the mask is used to scare unruly children who are taught to buy the "grandfather" off with gifts of tobacco.

Thanksgiving

Their Thanksgiving is celebrated with a festival. To announce when it is to take place, two messengers ride about dressed in corn husk clothing and wearing masks. These messengers carry a bag containing excrement and smear it on all those who do not immediately offer them a gift.

Masks are used or have been used historically by Indians all over the eastern United States from the land of the Eskimo to Florida, as well as the western parts of the country. Their use had particular importance among the Iroquois and Delaware Indians to whom the masking custom was highly religious and very important as a cure and preventive of disease.

Among the Iroquois people there are two masking societies, the False Face Medicine Society and the Husk Face Society. Many masks used by the Iroquois are painted red or black, have long hair, broken noses, distorted mouths and wry expressions. Small bags of tobacco are tied to them as offerings. These masks represent the spirit called "The Great One."

Here is the story of "The Great One":

The Creator finished the earth and banished evil spirits. Going west, he met the chief of the False Faces. They argued about whose earth it was and agreed to settle the title by contest.

To test their power, they summoned a distant mountain to come to them. The great False Face shook his turtle rattle and caused the mountain to move part way. The Creator summoned it to come, and it came directly up to them.

When his rival suddenly looked around, the mountain hit him in the face breaking his nose and distorting his mouth with pain. This is why the masks representing him are so grotesque.

The Creator assigned The Great One the task of driving disease from the earth, aiding travelers and hunters. The loser agreed that if humans make portrait images of him, call him grandfather, make tobacco offerings and set out a kettle of mush for him, they too shall have the power to cure disease by blowing on hot ashes.

Rim of the Earth

The Great One now lives on the rim of the earth and traverses the path of the sun. He carries a great staff and a turtle shell rattle. His face is red in the morning as he comes from the east and is black in the afternoon as he looks back from the direction of the setting sun.

But there are other spirits who are represented by another class of masks. These are little hunchbacked people who live everywhere in the forest. They are shy but cause mischief unless they are provided with gifts of tobacco and mush. They also have power to control sickness and cure the sick by blowing hot ashes on them.

Here is the story of these little "common faces":

As humans went about on earth hunting they carried native tobacco and mush. They were tormented by shy beings with long hair who flitted timidly behind trees. Sometimes a hunter found the ashes of his fire strewn about. It was discovered that a False Face came and scattered the coals as if seeking something.

That night the hunter had a dream in which the False Face requested tobacco and mush. The hunter supplied the request, and the Faces came and taught him their songs and method of treating the sick with hot ashes. In a dream they asked him to remember them each year with a feast, telling him they were everywhere in the forests bringing good luck to those who remember them.

The masks made of corn husks have another significance. They represent the spirits of agriculture and promise fertility and good crops. They are messengers of the three sisters—corn, beans and squash, the supporters of life. They visit the Indian

longhouse during two nights of the mid-winter festival accompanied by a great din. But these masks also have power to cure by blowing hot ashes.

Another unusual mask custom is that of the Cherokees in North Carolina. In addition to using the masks in medicine and religious ritual, the Cherokees use them in a traditional drama depicting the worst aspects of the white invaders from the east and symbolizing the diseases they introduced.

On a winter evening there is an all-night dancing program. Dancing starts with the decorous Bear Dance in which the dancers move contra-clockwise around the room to the accompaniment of singing and drumming.

Suddenly a band of masked strangers bursts into the room. They are dressed in slovenly fashion, draped in bed quilts or garbed in old ragged coats.

The strangers "do not speak Cherokee" so the host pretends to interpret what they say in whispers. He asks what they want. At first they want to fight; that is refused. Then they want women; likewise refused. Finally they want to dance and are told to join in the Bear Dance which is then resumed.

But the behavior of the strangers is completely rowdy. They do not dance properly but jump and cavort around awkwardly like an outlandish white imitation of Indian



GRINNING MEDICINE MEN—
Two models of Iroquois False Face Society dancers show how medicine men "dressed up" when the occasion demanded.

DENTISTRY

No Wisdom Teeth in Future

► IN ANOTHER three or four generations, humans may not have any wisdom teeth. Meanwhile, more and more of us are having impacted third molars, as dentists term those last teeth in the mouth.

For their successful removal, a combination of X-rays and geometry is an important first step, Dr. Harrison M. Berry, Jr., of Philadelphia, reported at the meeting of the American Dental Association in Washington.

Just one X-ray picture does not tell whether the roots of the impacted tooth lie behind or in front of the neighboring tooth. Dr. Berry advises taking two pictures.

For the second X-ray shot, the X-ray tube is moved to the right and the rays are directed at an angle less than 90 degrees to the film. The tooth that is behind will seem to move to the right, just as a telephone pole moves to the right of the front one in the line when you step slightly to the right of the line of poles. With this guide, the dental surgeon does not need to go in blindly when he operates to remove an impacted wisdom tooth. He knows its location in the jaw.

Careful X-ray studies are also important, Dr. Berry stressed, before removing teeth that may have curving roots. Unless the operator knows where these are, he may break them and a piece of root tip may be left in the jaw. This can cause trouble later if it is infected.

Some people are "grinders" and others are "choppers" when they chew, Dr. Samuel Pruzansky, special research fellow of the National Institute of Dental Research, reported.

A "grinder" can move his lower jaw from side to side as well as up and down, while a "chopper" cannot.

The patterns of electric currents created by the facial muscles as people chew are being mapped by Dr. Pruzansky, using electromyographic equipment like that previously used to record electrical responses of leg and arm muscles in polio patients.

When the chewing muscle pattern has been determined in patients having difficulty in chewing because of polio or other illness, special exercises can be prescribed in an effort to overcome the difficulty.

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AERONAUTICS

Universal Aviation Speech

► INTERNATIONAL AIRPLANE pilots, without knowing the part they are playing, are helping build an international "English" language for aviation for use between planes in the air and control towers in all parts of the world.

Control towers in many parts of the world are now making records of conversations between pilots and ground workers, the U. S. Civil Aeronautics Administration has announced. Out of these samples and certain scientific studies of words will be built a language which speakers of all languages can use in comfort, which will be positive and time-saving, and which will contribute to safe operation of aircraft anywhere.

English is more nearly a universal language in international aviation today than any other, and it will continue to be so under this plan. More English-speaking pilots are on international routes than all others combined because of the large number of American, Canadian, British and Australian planes in use.

Under plans of the International Civil Aviation Organization, which includes over 50 nation members, all international control towers are expected to have operators who understand English as well as their own language.

Member nations of the International Civil Aviation Organization, ICAO for short, have agreed that the English language should be the basis of the proposed "International Language for Aviation." They

have agreed also that words with Latin roots should be given the preference in developing the phraseologies.

The new international aviation language being selected will be an easy-to-use but special kind of English. Pilots and ground workers in any country, whatever the local language, will be able to converse in correct English words and phrases exact in their aviation meaning.

Science News Letter, October 27, 1951

INVENTION

Boot Extending to Waist Patented as Slushguard

► ONE-PIECE "boots-and-bloomers" garment, on which the government has issued a patent, is designed to provide waist-high protection from automobile-splashed slush on winter streets or to protect the lower body in rainy weather. Patent 2,571,202 was awarded to Joseph Clyne, Bronx, N. Y.

The garment is made of water-proof material and has slide fasteners of the zipper type extending from each sole to the waist. The boot is the overshoe type to wear over ordinary foot-wear. Leggings fit snugly around the lower legs nearly up to the knees. Above are the bloomers. They are roomy enough to permit short skirts to be tucked inside.

Science News Letter, October 27, 1951



BAD MAN—In the eyes of the Indian, this mask represents a big, bad white man.

dancing. They seize women and make violent and offensive gestures. Finally they bolt out the door and the dancing is decorously resumed.

This ceremony was named by the English the Booger Dance. The masks used were originally of wood and were caricatures of white men or occasionally of Negro slaves. Today they are made of cardboard. All are grotesque to emphasize the unkempt, uncouth and diseased faces of the disreputable white man, seen through Indian eyes.

Another unusual type of mask used by the Cherokees is made of animal hide or fur, and represents the face of an animal. Such a mask, used as a hunting lure, is shown on the cover of this week's SCIENCE NEWS LETTER.

Science News Letter, October 27, 1951

MARINE BIOLOGY

Find Plenty to Eat In Gulf of Alaska

► FIGHTING MEN or others cast adrift in the Gulf of Alaska "never need starve to death." They could probably get along by eating the mussels found in masses of floating kelp many hundreds of miles from where the sea plant usually grows.

This is the conclusion of John D. Isaacs, assistant to the director of the University of California's Scripps Institution of Oceanography at La Jolla, Calif. He has just returned from a two-month survey trip exploring the eastern North Pacific, an ocean area never really studied before.

One of the most interesting features discovered, he reports, was the masses of floating kelp far out in the ocean. The kelp was covered with myriads of small mussels. To prove their point, four of the survey party made an entire meal of the mussels found on just one drifting stalk.

Science News Letter, October 27, 1951

MEN—
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CHEMISTRY

Fluorocarbons for Industry Commercially Produced

► **UNRULY FLUORINE**, now tamed in a relatively new family of chemicals known as fluorocarbons, has found so many industrial uses that these compounds have now entered production on a semi-commercial scale in a new plant.

The plant was constructed and is being operated at Hastings, Minn., by Minnesota Mining and Manufacturing Company of St. Paul. An electrochemical process is used. It is based on inventions by Prof. J. H. Simons of the University of Florida. Research men of the St. Paul company have found many uses for the fluorocarbons and predict countless others. Products will all contain a high percentage of fluorine.

Primary use for the fluorochemicals is in manufacturing other products such as resins, dyes, pharmaceuticals, polymers, solvents, refrigerants, fire-extinguishing compounds, dielectrics, hydraulic fluids and lubricants. Made with the aid of fluorocarbons, they have such improved qualities as greater heat and chemical stability, unusual optical properties, greater surface activity, increased fire resistance and more resistance to fungus.

Their resistance to heat, corrosion and acid formation gives them possible applications in permanent lubricants and hydraulic fluids, replacing oil. Certain fluorochemicals will produce what is known as wetter water, that is, water which has greater ability to penetrate clothing or other surfaces on which it is applied.

In the Simons process no free fluorine is used. All danger of handling this chemical is eliminated. The fluorocarbons are made using hydrogen fluoride as a basic material. Fluorocarbons chemically are related to hydrocarbons, important source of which is petroleum, but contain fluorine instead of hydrogen.

Science News Letter, October 27, 1951

NUTRITION

Wonder Drug Feeds Salvage Runt Pigs

► **THE NEW** antibiotic-containing feed supplements are much more effective in transforming runts and unthrifty pigs into healthy pigs than they are in speeding up the growth of normal animals.

This is the advice given to farmers by the University of California College of Agriculture at Davis.

It has been found that growth rate was stepped up nearly 100% when antibiotics were added to the diet of weak, unthrifty pigs. The increase in healthy pigs was from 10% to 20%. In some instances, normal pigs have shown no effect at all from the compounds.

This new development in feed has moved to American farms surprisingly fast. Antibiotics include aureomycin, bacitracin, ter-

ramycin, penicillin, and streptomycin. Farmers have reported good results from feeding supplements containing antibiotics to growing-fattening hogs and breeding stock under average farm conditions.

Fortunately, the addition of antibiotics to mixed feeds should not increase the cost greatly because relatively small amounts of the supplements are needed per ton of feed.

Science News Letter, October 27, 1951

BIOLOGY

Anti-Germ Chemical Made From Germs

► **A NEW** antibiotic, or germ-against-germ chemical, is announced by Drs. A. Hirsch and Dorothy M. Wheeler of the National Institute for Research in Dairying at Shinfield, near Reading, England, in the journal, *NATURE* (Oct. 6).

This new antibiotic was obtained from germs of the streptococcus family and was tested against *Staphylococcus aureus*, the germ family involved in boils among other ailments.

Streptozyme is the name given the new antibiotic, to show that it is an enzyme with ability to disintegrate cells.

Science News Letter, October 27, 1951

INVENTION

New Electric Lamp Uses Voltage Through Phosphor

► **AN ELECTRIC** lamp that is neither of the ordinary incandescent nor usual fluorescent types was recently issued a patent. It is called an electroluminescent lamp, and in it a voltage is applied directly to a phosphor, or the phosphor is placed in an electric field.

In the usual fluorescent light an electric discharge is sent through gas in a closed tube. Invisible radiation emitted is converted to visible light by a chemical preparation known as a phosphor that coats the inside of the tube. In this type the current is sent through the phosphor itself, the phosphor being placed between two conductors across which the voltage is applied.

Alternating current will be used ordinarily with this electroluminescent lamp because the light appears to be produced only when the voltage is applied and removed, or when the voltage is changed.

In this flat three-layer lamp, the phosphor material is mixed with wax or some other light-transmitting dielectric material to form an inner layer between a metal reflecting background and a glass plate on which is a transparent conducting coating. The three layers are tightly pressed together to exclude air.

Patent 2,566,349 was awarded to Eric L. Mager, Peabody, Mass., for this invention. Patent rights have been assigned to Sylva Electric Products, Inc., Salem, Mass.

Science News Letter, October 27, 1951

IN SCIENCE

MEDICINE

Red Cell Transfusions Save Blood, Help More Patients

► **BLOOD** IN blood banks all over the country can be used more economically if the fluid part, or plasma, and the red cells are used separately according to the patient's need, Drs. Donald W. Smith and John Elliott of Miami, Fla., declare in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (Oct. 20).

Of the 28,000 transfusions prepared each year at the Dade County, Fla., blood bank, about 15% are given as suspensions of red blood cells. Another 15% are given as plasma. This means that 15% of the blood collected does double duty.

The chief conditions in which red blood cells instead of whole blood will be good medicine for the patient are listed by the Florida scientists as follows: 1. uncomplicated anemia of the iron deficiency type; 2. anemia in heart disease, high blood pressure or kidney disease where an increase in blood volume is not desirable; 3. anemia in cases in which it is necessary to get a quick, effective increase in the oxygen-carrying capacity of the blood; 4. preparation of anemic patients for surgery when their blood volume is normal.

Details of how to calculate the dose of red cells needed by a patient and of how to prepare the red cell suspension are given with a plea not to waste plasma by giving whole blood when only red cells are needed.

"This economy," the doctors state, "permits stock-piling of more plasma for emergency or wartime needs."

Science News Letter, October 27, 1951

NATURAL RESOURCES

Nibbling Deer Threaten West's Ponderosa Pines

► **DEER NIBBLING** on young pine seedlings are seriously threatening our future supply of ponderosa pine and other evergreens in western forests.

So concludes Lowell Adams, biologist for the U. S. Fish and Wildlife Service at the Forest Range and Experiment Station in Missoula, Mont. His figures on the heavy destruction of young pine seedlings by deer were obtained by comparing over a five-year period the number of trees growing on plots of land, alike except for the fact that deer were excluded from half of them.

He found 114 seedlings growing within the deer-sheltered spots, only 18 on those where the deer were free to nibble. He suggests further studies to determine what deer population can be supported on woodlands without harming the future supply of pine.

Science News Letter, October 27, 1951

WILDERNESS FIELDS

MEDICINE

Hypo Points Rough, Hospital Bureau Warns

► THE NATION'S hospitals were warned to examine the points of their hypodermic needles before they are put into service for giving "shots" of morphine, penicillin and all the other many medicines given by hypodermic injection.

Reason for the warning, given by the Hospital Bureau of Standards and Supplies in New York, is that the bureau's research department has been finding that the points of "a great many" needles have wire edges, metal slivers and loose metal particles.

Whether the wires and metal particles constitute a health hazard is not known to the U. S. Food and Drug Administration which has been consulted by the Hospital Bureau. The Federal agency, however, plans to investigate the matter.

"With all the emphasis that has been placed on maintaining the sterility and removing undissolved material in solutions (for hypodermic injections) it seems strange," the Hospital Bureau states, "that no more consideration has been given to the cleanliness of the needles."

Hospitals sterilize needles before use. This kills germs but does not necessarily remove solid particles.

Science News Letter, October 27, 1951

RADIO

Anti-A-Bomb Radar Ring Believed Near Completion

► CONSTRUCTION of the outer radar ring of defenses against A-bomb attack of this continent may shortly be completed.

This was indicated by an announcement from the General Electric Company that it has completed an order for the U. S. Air Force for large and complex radar systems, capable of detecting aircraft at long ranges.

The company designed rubberized fabric housing, held up in a half-balloon shape by air pressure, to protect the radar installations in Arctic positions. One-half pound of air pressure, it was said, would enable the balloon housing to stand up against winds of 125 miles an hour. It is 36 feet high and 54 feet in diameter.

It would not take too many of these complex radars to provide a screen all the way across the top of the continent. They, perhaps, could be spaced as much as 300 miles apart.

However, even these new radars—with ranges of up to 250 miles—would not provide complete assurance that enemy bombers would go undetected. The closer to

the surface a plane flies, the more limited is the ability of the radar to pick it up.

Backing up the radar system, it is planned, will be a net of airplane spotters, working under the Air Force and in conjunction with Civil Defense. Not only would the civilian spotters catch planes which slipped through the radar curtain, they also would be expected to keep track of the planes once they were behind the radar and streaking for American cities.

Each of the new radar installations would need 400 men to operate round-the-clock.

Science News Letter, October 27, 1951

TECHNOLOGY

Full Automatic Controls For Ocean Liners Predicted

► OCEAN LINERS, like airplane transports, are now controlled in part by automatic devices but by 1960 will be robot controlled from bridge to keel, the American Merchant Marine conference in New York was told.

Electronic developments in marine design will usher in this age of automatic ships, Maurice R. Eastin, Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., stated. Included among these developments will be automatic navigation devices, automatic boiler controls, master controls for propulsion machinery, and sensitive climate control for passengers, crews and cargo.

Crews will be somewhat smaller but more efficient as the robot devices will better the performances of manually manned ships, he stated. We are approaching the all-automatic ship, he added, not for labor-saving and comfort advantages alone but for greater efficiency, safety and lower operating costs.

Science News Letter, October 27, 1951

MEDICINE

Plastic Sponge Used for Lungs Collapsed by TB

► THE PLASTIC sponges that can be bought in drugstores for washing dishes, the family car and for other household purposes are solving a 50-year-old tuberculosis problem, it appears from studies reported by Dr. Sidney Dressler of the National Jewish Hospital in Denver.

The problem is to find the simplest and safest way of collapsing a tuberculous lung for rest and healing. In the past tuberculosis specialists have used materials ranging from mineral oil and rubber to lucite spheres. All of these had shortcomings.

The plastic sponge material, supplied in the form of malleable strips that can be shaped by hand in the chest, has been used with good results in 20 patients during the past year, Dr. Dressler and associates report in the medical journal, *DISEASES OF THE CHEST*.

Science News Letter, October 27, 1951

INVENTION

Hot Seat for Hunters On Cold Days Patented

► HOT SEAT for the deer hunter waiting in the woods with gun in hand for a buck to come within range is provided by an invention which received patent 2,567,323. It is suitable also for the winter fisherman who sits for long hours before a hole in the ice. Inventor is Allan S. Cyphert, Saltsburg, Pa.

The device is a sort of seat-high bucket with ventilating holes in the casing and a hinged cover which provides the seat. Within is a small tank to hold oil or kerosene and a wick like a lamp. When the wick is lighted, the size of the flame can be controlled by turning a button on the outside, much like the control to regulate the flame in an ordinary kerosene lamp.

Science News Letter, October 27, 1951

PHYSIOLOGY

Faulty Jaw Action Is Blamed for Ear Stuffiness

► STUFFINESS IN the ears and even pain and impaired hearing often are due to faulty jaw action and position rather than to disease of the ear and sinuses formerly blamed for the condition, Dr. James B. Costen of St. Louis reported at the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago.

Dr. Costen based his statement on findings among 800 patients.

Snapping or buzzing sounds in the ears, dizziness, headache, burning sensation in the throat, tongue and side of nose, and lockjaw also can be traced to improper position and action of the teeth and jaws, he said.

The stuffy sensation in the ears and the dizziness he found came from pressure on the eustachian tube. This is the channel that connects the ear with the pharynx in the throat. During swallowing the tube is temporarily forced shut by the bulging of tissue next to it.

Pain in front of the ear, spreading through the whole area even to the tongue, comes when abnormal movement of the jawbone injures an important nerve running close to the point at which the jawbone and upper part of the skull meet. Irritation to the nerve near the joint may be transferred to another nerve which controls the muscles used in chewing. This stiffens these muscles, causing lockjaw.

Lockjaw may also be produced in conjunction with impacted teeth, abscesses or decay of the teeth. This was found in a considerable number of younger people. Correction of the tooth condition generally relieved the symptom, but in some cases special exercises helped relax the muscles.

Science News Letter, October 27, 1951

ASTRONOMY

Orion Heralds Winter

Foreshadowing winter's approach, the heavenly warrior Orion appears in November's evening sky. Six of southern constellations visible are connected with water.

By JAMES STOKLEY

► THE APPROACH of winter is definitely foreshadowed in November as the constellation of Orion makes its appearance. This group of stars, which is supposed to form the figure of a warrior, is seen low in the east, as shown on the accompanying maps. These give the arrangement of the brighter stars as seen about 10:00 p. m., your own kind of standard time, at the first of November; about 9:00 o'clock at the middle of the month and about 8:00 at the end.

Perhaps the most characteristic feature of Orion is the three stars in a row that form the warrior's belt. To the left of the belt is Betelgeuse, and to the right Rigel. The former is in his shoulder and the latter in one leg, so in the position we now see him, he is lying on his back. However, when he has risen high into the south in the evening skies of mid-winter, he will be standing upright.

Above Orion is Taurus, the bull, with brilliant Aldebaran, which has a distinctly ruddy hue. To the left of Taurus, toward the northeast, is Auriga, the charioteer, in which first-magnitude Capella is seen. And just below this group we find part of the Gemini, the twins, of which the brightest star is called Pollux.

Jupiter in Pisces

High in the south these evenings is the constellation Pisces, the fishes, which contains no stars as bright as the first, or even the second magnitude, but at present is the location of the brightest celestial object visible, except for the moon. This is the planet Jupiter. On the astronomical brightness scale, it is now of magnitude minus 2.3, which means that Jupiter is some 20 times the brilliance of a typical first magnitude star. It is, of course, a planet, one of the family of bodies that revolve around the star we call the sun and of which the earth is one of the smaller members. Jupiter is the biggest, with a diameter of 87,000 miles, or about 11 times that of the earth.

To the west and southwest we find the rest of the first-magnitude stars now visible. Low in the southwest stands the figure of the southern fish, *Piscis Austrinus*, with the star Fomalhaut. Because it is so near the horizon, its light is dimmed by the earth's atmosphere and it does not shine as brightly as the first-magnitude star that is seen high overhead. Directly west, so that part of it is shown on the map of the southern sky,

and the rest on the one for the north, is *Aquila*, the Eagle, in which Altair is visible. Here also we have three stars in a row but, unlike the belt of Orion, the middle one is much brighter than the two attending it.

Above the right-hand end of *Aquila* we see the Northern Cross which is now standing vertically in the sky in the constellation of *Cygnus*, the swan. At the top is Deneb, marking the swan's tail. In fact, this star is named after the Arabic word for tail. The arms of the cross form the bird's wings, and the lower part of the upright his long neck outstretched in flight.

Below the cross and farther right is Vega, in the constellation of *Lyra*, the lyre.

Planets Visible in Morning

Three other planets may be seen in the east in the early morning a few hours before sunrise. Brightest is Venus, of magnitude minus four, or nearly five times as bright as Jupiter. In the same group and considerably fainter, though of the first magnitude, is Saturn, which Venus passes very closely on Nov. 21. The planet Mars, of the second magnitude, is in the next-door constellation of *Leo*, the lion, in the first part of November but later it too moves into *Virgo*.

The remaining planet that can ever be seen with the naked eye is little Mercury. At the end of November this is in the evening sky, very low in the southwest at dusk, but it will be very difficult to locate.

It is a curious fact that six of the constellations now visible, all in the southern sky, have some connection with water. Two of these are *Pisces* and *Piscis Austrinus*. Then there is *Aquarius*, the water-carrier, which is just above *Fomalhaut*. On the old star

maps, including one carved thousands of years ago in an Egyptian temple at Denderah, *Aquarius* was represented as an old man holding a jar from which a stream of water is flowing into the mouth of the southern fish!

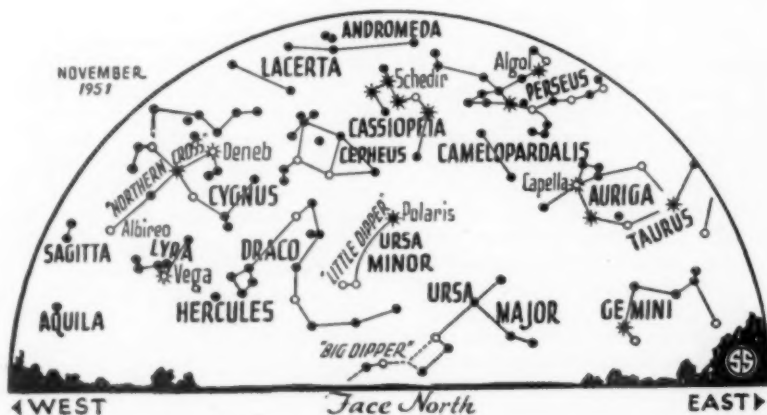
The astronomers of most ancient nations, except the Arabs, seem to have represented *Aquarius* in much the same way. Even among some American Indians it was known as "Kumbha," which means "the water jar." And the only reason that the Arabs differed was that their law forbade the portrayal of a human figure. Accordingly, they pictured the constellation as a mule carrying two barrels of water on his back.

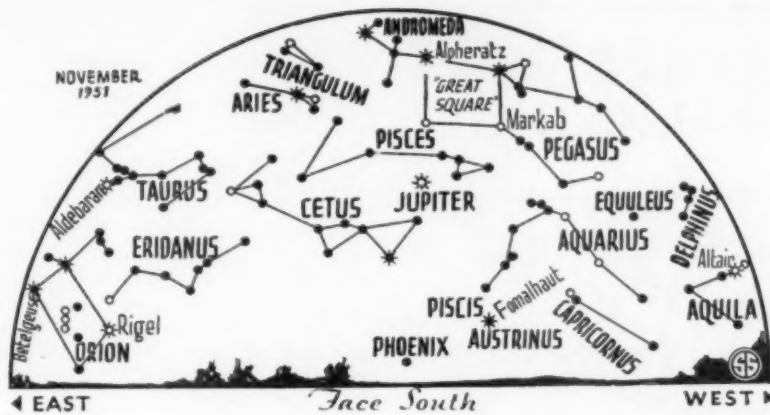
The other aquatic constellations, now visible in this part of the sky, are *Capricornus*, the sea-goat, to the right of *Fomalhaut*; *Cetus*, the whale, below *Pisces*; and *Eridanus*, the river, between *Orion* and *Cetus*.

One suggestion as to why this part of the sky, with all its watery significance, was made a sort of celestial sea is that the sun passed through this region, when it was established, during the rainy season of the year. In any event, it hardly seems likely that coincidence is responsible, or for the similarity of the conception of *Aquarius* among so many ancient peoples. It is one of the things that leads some to believe that many of the constellation figures originated in some one unknown place.

Origin of Star Names

According to Richard H. Allen's "Star Names and Their Meanings," which is the standard authority on the origin of the names, the Babylonians associated the stars of *Aquarius* with their 11th month, "Shabatu," or "the curse of rain," which corresponds to January and February in our calendar. Their "Epic of Creation" tells of the Deluge in the 11th book, which corresponds to this 11th constellation of the





☉ ☽ ☿ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

zodiac, the sun's path. Other books coincide with the other zodiacal signs. Apparently they gave to the group of stars forming the water-jar in Aquarius the name of "Gu," which, says Allen, means "a water jar overflowing." To the Akkadians it seems to have been named "Ku-ur-ku," or "the seat of flowing waters."

In any event, when we look at these groups tonight, and wonder about them, we can be sure that many thousands of years ago other men did exactly the same!

Celestial Time Table for November

Nov.	EST	
2	8:00 a.m.	Moon nearest, distance 227,200 miles
6	1:59 a.m.	Moon in first quarter
10	12:59 a.m.	Moon passes Jupiter
13	10:52 a.m.	Full moon
14	4:00 a.m.	Venus farthest west of sun
16	early a.m.	Meteors visible, radiating from constellation of Leo
18	8:00 a.m.	Moon farthest, distance 251,900 miles
21	5:00 a.m.	Venus passes Saturn
	3:01 p.m.	Moon in last quarter
24	6:26 a.m.	Moon passes Mars
25	4:58 a.m.	Moon passes Saturn
	12:49 p.m.	Moon passes Venus
28	6:00 a.m.	Mercury farthest east of sun
30	8:00 a.m.	Moon nearest, distance 223,900 miles

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, October 27, 1951

DENTISTRY

60 Teeth in Jaws But Only Two to Chew With

► THE CASE of a child who had more than 60 teeth within his jaws but only two that erupted through the gums into chewing position was reported by Dr. Stanley A. Lovestadt of the Mayo Clinic, Rochester, Minn., at the meeting of the American Dental Association in Washington.

He cited the case as an example of the aid dentists and their patients can get from X-ray pictures.

When a child has more than the usual number of teeth, a defect in the formation of skull bones may be suspected, he said.

When a baby's teeth erupt earlier than is usual, the child may have some glandular disturbance. Late eruption of the first teeth also may be due to a glandular disorder. Rickets may be a contributing factor.

In a glandular condition known as hyperplasticism, which causes the bone structure to become giant size, the teeth, oddly enough, are of ordinary size.

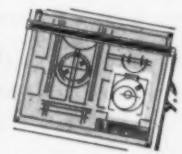
In cases of defective or incomplete development of teeth, general causes, including vitamin deficiency, must be considered.

Science News Letter, October 27, 1951

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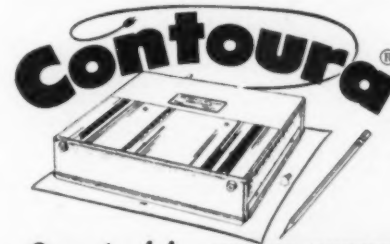
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INVENTION

Alloys for Low Cost Cutting Tool Steel Are Patented

► **ALLOY STEELS**, of relatively low cost and suitable for use in cutting tools, have a high degree of resistance against softening when subjected to temperatures in the range above 1100 degrees Fahrenheit. They are claimed to have better resistance to temperatures above 1100 degrees than other steels now available.

This steel alloy contains less than 3% chromium, 3% tungsten, 2% vanadium, 4% molybdenum and 1.2% carbon. Amounts vary less than 1% from the figures given.

Inventor is Peter Payson of New York. Patent 2,565,264 was awarded to him. Rights are assigned to Crucible Steel Company of America, also of New York.

Science News Letter, October 27, 1951

How to Make a Living in the Country

You can enjoy that country home to-morrow, if you know how to make it pay for itself, and give you a comfortable living besides.

Fred Tyler's amazing Passport to Independence is now ready for you . . . a heart-warming book ready to help you walk out of your job . . . free as a bird. It proves once and for all that you can be your own boss . . . live in the country and make it pay with or without farming. It's a wonderful book . . . a store-house of information which tells you where to go . . . what you need . . . how to get started. Here are the names and locations of the richest, most beautiful boom areas in America . . . where land is cheap and where living is easy . . . where you can pick your neighbors and be your own boss . . . Quiet, friendly, prosperous country towns from coast to coast waiting to welcome new neighbors, new business men and women to serve them. Do you want a clean life with your own home and your own land?

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Dayflower

► **LATE OCTOBER** though it is, you can find the dayflower in bloom in a thousand places in the moist woods, and if the winter turns out to be a mild one you will find it still in bloom after several snows have fallen. This lowly, creeping, unobtrusive plant with the curious two-petaled blue or purple flowers is one of the hardiest bloomers we have.

If you will pluck one of the little flowers and examine it more closely, you will find

that it is not really two-petaled, but has the orthodox three of the lily tribe and the rest of the great branch of the flowering world known to botanists as the monocotyledonae. The third petal is so much smaller than the other two that it is often overlooked at first glance.

More specifically, the plant belongs to the same group as the familiar spiderwort and the even more familiar Tradescantia or Wandering Jew widely cultivated in window boxes. Its creeping habit and the shape of its leaves and jointed stems remind one at once of the latter species. It also has the same trick of striking root at the joints or nodes, which makes for its success in taking care of itself in the woods.

There is also a suggestion in the arrangement of the flowers that connects this flower with the spiderwort. It will be remembered how the upper leaves of the tall spiderwort stem bunch themselves protectively around the flowers, forming a sort of rosette or clump. This function is performed in the dayflower by a single upper leaf, which folds inward to form a sort of hood.

The plant receives its English name from the brevity of the lives of its blossoms, which are even more evanescent than the tender flowers of the spiderwort. They do not even live as long as the name indicates, for they unfold in the morning and by afternoon are already past their time and turned inward, withering on their stems.

Science News Letter, October 27, 1951

DENTISTRY

Find More Tooth Nerves

► **WHY THE** dentist's drill, or burr, hurts before it has cut very far into the tooth is explained by research reported at the meeting of the American Dental Association in Washington.

Tiny nerve fibers extend much farther out toward the enamel surface of the tooth than most dental authorities previously believed, Dr. Ira R. Telford and Miss Margaret Powers of the University of Texas School of Dentistry find.

Formerly when dentists looked at a cross section of a tooth under the microscope, they thought the nerve fibers from the pulp

inside the tooth stopped at a layer of dentin-forming cells called odontoblasts. Thread-like structures seen running beyond into the dentin itself were thought to be processes coming from the dentin-forming cells.

Very fine, almost sub-microscopic nerve fibers also run into the dentin and loop around the tubules of dentin, Dr. Telford and Miss Powers find. They were able to identify these by a special silver staining technique which Miss Powers adapted to teeth from brain and spinal cord nerve staining methods.

Science News Letter, October 27, 1951

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The Annual National Science Fair is held each spring in a different city: 1950—Philadelphia; 1951—St. Louis; 1952—Washington. The boys and girls who show the best science exhibits in cooperating local science fairs get three-day all-expenses-paid trips to the National Science Fair and a chance to compete there for honors and awards. Only sophomores, juniors and seniors in high school are eligible to go to the NSF but in most local science fairs boys and girls of all ages can compete for local honors.

The Annual National Science Talent Search is held each year for seniors in high school who want to compete for \$11,000 in Westinghouse Science Scholarships for their college education. Annually 300 are honored. Of these, 40 boys and girls, chosen as winners, also receive a five-day all-expenses-paid trip to Washington, D. C. to attend the Science Talent Institute. Experience in science clubs and participation in science fairs is great practice for those who are planning to compete in the STS when they are old enough.

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BODY, MIND AND SUGAR—E. M. Abrahamson and A. W. Pezet—*Holt*, 206 p., \$2.95. Written for the general public to make known the author's belief that many ills may be traced to a deficiency of blood sugar.

DICTIONARY OF THE ARTS—Martin L. Wolf—*Philosophical Library*, 797 p., \$10.00. Covering the implements, techniques and special terms employed by the arts from the days of the cave-dwellers.

DISCOVERING ARITHMETIC, Book 1: Teacher's Edition—Catherine Stern—*Houghton Mifflin*, 126 p., illus., paper, \$1.60. A new approach to the teaching of arithmetic through understanding rather than drill.

DIVING TO ADVENTURE: The Daredevil Story of Hunters Under the Sea—Hans Hass, translated from the German by Barrows Mussey—*Doubleday*, 280 p., illus., \$3.75. Telling the story of the author's experiences in underwater harpoon hunting.

DOUBT AND CERTAINTY IN SCIENCE: A Biologist's Reflections on the Brain—J. Z. Young—*Oxford University Press*, 168 p., illus., \$2.50. The B. B. C. Reith lectures for 1950 discussing man as seen by a biologist, and the brain as a human calculating machine.

THE EFFECT OF ISLANDS ON SURFACE WAVES—Robert S. Arthur—*University of California Press*, 24 p., illus., paper, 35 cents. When a train of waves is interrupted by an island there is generally a zone of "wave shadow" to the "wave lee" of the island. Important data for wave forecasting in connection with amphibious military operations.

ENCYCLOPEDIA OF SPORT THRILLS—Jack C. Dawson—*Hart*, 223 p., illus., \$2.75. Records

attained in various sports together with information about leading personalities.

THE ENERGY EXCHANGE BETWEEN SEA AND ATMOSPHERE AND SOME OF ITS CONSEQUENCES—Woodrow C. Jacobs—*University of California Press*, 122 p., illus., paper, \$1.00. Tables and charts showing evaporation values and exchange of sensible heat over the Atlantic and Pacific.

EROSION CONTROLLED BY TERRACES—H. B. Atkinson and Orville E. Hays—*Agricultural Experiment Station, University of Wisconsin*, Bulletin 494, 16 p., illus., paper, 5 cents. Used with good crop rotation and fertility program, terraces are considered the best means of erosion control.

EVALUATING STUDENT SUCCESS IN MEDICAL EDUCATION—Archer W. Hurd—*Medical College of Virginia*, 69 p., paper, \$1.75. Reporting the results of studies of success and failure in medical school.

EXERCISES AFTER CHILDBIRTH—Gertrude Behn—*Livingstone (Williams and Wilkins)*, 32 p., illus., paper, 50 cents. A physiotherapist describes and illustrates with photographs exercises designed to restore the girlish figure.

FIRE FIGHTING FOR HOUSEHOLDERS—Federal Civil Defense Administration—*Govt. Printing Office*, 32 p., illus., paper, 5 cents. What to do to fight the fires caused by bombing or just by accident or carelessness.

HOW CHILDREN LEARN ABOUT HUMAN RIGHTS—Wilhelmina Hill and Helen K. Mackintosh—*Govt. Printing Office*, Office of Education Bulletin 1951, No. 9, 16 p., illus., paper, 15 cents. A guide for teachers.

HOW CHILDREN USE ARITHMETIC—Effie G. Bathurst—*Govt. Printing Office*, Office of Education Bulletin 1951, No. 7, 13 p., illus., paper, 15 cents. Discussing teaching methods that grew out of recent research and telling how children can make arithmetic a part of life.

JOURNEY TOGETHER—Turnley Walker—*McKay*, 144 p., \$2.50. The account of a man's recovery from polio.

A LABORATORY MANUAL OF QUALITATIVE ORGANIC ANALYSIS—H. T. Openshaw—*Cambridge University Press*, 2d ed., 95 p., approx. \$1.19. Originally compiled for students in practical organic chemistry in the University of Manchester.

THE MEANING OF EVOLUTION—George Gaylord Simpson—*New American Library*, 192 p., illus., paper, 35 cents. A revised and abridged edition of a book originally published by Yale University Press.

MINERALS YEARBOOK 1949—Bureau of Mines—*Govt. Printing Office*, 1662 p., \$4.50. Official statistics of the industry.

NO GREEN PASTURES—Roi Ottley—*Scribner's*, 234 p., \$3.00. At first the author, a Negro newspaper writer, was charmed by European treatment of his race until he discovered that the European or Colonial Negro is in a quite different position from the American Negro with dollars to spend.

THE ONLY WAR WE SEEK—Arthur Goodfriend—*Farrar, Straus and Young*, 128 p., illus., paper, \$1.00. Showing in dramatic, excellent photographs the need for an all-out attack on poverty, ignorance, disease and oppression wherever they exist and presenting ourselves as seen through the eyes of those we would like to influence. Under the auspices of Americans for Democratic Action.

POPULAR MECHANICS GUIDE TO HOME REPAIRS—*Popular Mechanics Press*, 192 p., illus., \$2.50. Includes how-to-do-it articles on such matters as floor repair, painting, mending chimneys, and replacing panes of glass.

QUANTITATIVE ORGANIC MICROANALYSIS—Al Steyermark—*Blakiston*, 389 p., illus., \$7.00. The procedures given are those used extensively by the author in the laboratories of his company.

SENSORY METHODS FOR MEASURING DIFFERENCES IN FOOD QUALITY: Review of Literature and Proceedings of Conference—Elsie H. Dawson, Betsy L. Harris and others—*Govt. Printing Office*, Agriculture Information Bulletin No. 34, 134 p., paper, 35 cents. Prepared with the aim of attaining uniformity in methods of testing by taste, smell or feel.

THE SOCIAL SYSTEM—Talcott Parsons—*Free Press*, 575 p., \$6.00. Providing the pattern or conceptual scheme for the analysis of the structure of various social systems. An attempt to carry out the intention of Pareto, using a new approach.

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METEOROLOGY

Turbulence Cause Probed

► TURBULENCE in the atmosphere which is sometimes so strong it breaks up planes, spilling the passengers into the air, may soon be licked through research being done at the U. S. Weather Bureau in Washington.

Turbulence, sometimes coming on when it is least expected, has cost lives, is a cause of much passenger discomfort on passenger airlines, and must be taken into account in designing commercial and military planes.

Studies at the Weather Bureau's National Airport office tend to indicate that much plane-jarring turbulence is caused by sudden changes in speed and direction of the wind, rather than by "air pockets."

The studies, not yet completed, are based on reports being sent in by military and commercial pilots as to the extent of the turbulence they have met, and the time, place and altitude at which it took place. In many cases, the reported turbulence, when plotted on maps, lines up remarkably with the position of the extremely fast and sharply defined wind current known as the "jet stream."

Research into turbulence is being conducted by Conrad P. Mook, research forecaster of the Washington forecast district, and is being sponsored jointly by the Weather Bureau and the National Advisory Committee for Aeronautics.

Jet streams are noted for the sharp changes between the speed of winds within the streams and the speed outside. Also there is much vertical shifting of the atmosphere associated with jet streams. When a plane enters the jet stream, it tries to adjust itself to the new and sudden wind conditions. This, according to one of the assumptions on which the studies are based, causes the plane to bounce violently.

The jet stream, which travels from west to east all around the world in the northern hemisphere, moves from north to south and back to north again from day to day. Sometimes there are no indications of its presence to the pilot until his plane meets it. However, jet streams are always plotted on weather maps.

Other types of change in wind speeds also cause turbulence, it is believed. In any case, researchers are concentrating first on the jet stream.

When the research is finished, it is hoped pilots can be provided with methods of avoiding areas of turbulence or, if this is not possible, of taking evasive action which will eliminate or minimize the effects of turbulence on the plane.

Science News Letter, October 27, 1951

Climbing roses taken off the trellis, laid on the ground and covered with leaves or straw, are less apt to be winter-killed.

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THE STORY OF PUEBLO POTTERY—H. M. Wormington and Armita Neal—Denver Museum of Natural History, Museum Pictorial Number 2, 60 p., illus., paper, 56 cents. From the pottery of the Basketmakers made in about 400 A.D. to that of Indians who sell their wares along the roadside today.

TAXONOMY OF VASCULAR PLANTS—George H. M. Lawrence—Macmillan, 823 p., illus., \$7.95. A textbook which does not presuppose formal training in all allied botanical sciences and yet is suitable for advanced students.

TEXTBOOK OF BIOCHEMISTRY—Edward Staunton West and Wilbert R. Todd—Macmillan, 1345 p., illus., \$12.00. Methods for the use of radioactive isotopes and the results obtained from this research are stressed in this text.

THIS FASCINATING ANIMAL WORLD—Alan Devoe—McGraw-Hill, 303 p., illus., \$3.75. Written to answer the questions asked by a small boy about the animal kingdom. Do crocodiles weep crocodile tears? Does a centipede have a hundred legs? Can a fish drown?

TROPICAL NUTRITION AND DIETETICS—Lucius Nicholls—Bailliere, Tindall and Cox (Williams and Wilkins), 3d ed., 476 p., illus., \$6.00. In addition to the fundamental principles of nutrition there is a wealth of material on the foods of the tropics.

UNION BAY: The Life of a City Marsh—Harry W. Higman and Earl J. Larrison—University of Washington Press, 315 p., illus., \$4.00. Describing the teeming wildlife in the heart of the city of Seattle.

THE WILL TO LIVE—Arnold A. Hutschnecker—Crowell, 278 p., \$3.50. A physician writes understandably about the relation of the emotions to sickness and to health.

A YEAR BOOK OF RAILROAD INFORMATION, 1951—Eastern Railroad Presidents Conference, 96 p., illus., paper, free upon request to publisher, 143 Liberty Street, New York 6, N. Y. Facts and figures with comparisons with previous years.

Science News Letter, October 27, 1951

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❁ **CHRISTMAS TREE LAMP**, for the dining table or mantelpiece, has a decorated tree-shaped shade in colors that revolves continuously but silently over a colored light. It comes in two sizes, 17 and 29 inches tall, and the bulb is a 1,000-hour type.

Science News Letter, October 27, 1951

❁ **NON-SKID SCATTER RUGS**, woven from twisted, durable plastic strips, not only stay put but are easily cleaned and are resistant to abrasion, tearing, flame, oils, alcohol, household chemicals, mold and mildew. Cleaning is done with sponge or damp cloth.

Science News Letter, October 27, 1951

❁ **BALL MILL**, a small tubular affair for use in medical laboratories to beat highly dangerous bits of diseased matter into an emulsion, is made of stainless steel and uses inside smashing balls of the same material. Samples may be withdrawn through the needle of a syringe without opening the tube.

Science News Letter, October 27, 1951

❁ **RADIATION LAMPSHADES**, so called because of their shape, are sheet metal devices painted white to set outdoors in a target area to determine the position of an atomic bomb explosion. Heat radiation



from the blast will scorch the paint on the inside, showing the direction from which the radiation came. The device is shown in the illustration.

Science News Letter, October 27, 1951

❁ **CLOTHING ROD** for the closet is a hollow steel extension rod with a narrow slit lengthwise in its lower side and within which are tiny wheels to which the hanger-

holding carriers are attached. Each carrier holds two garments in staggered position and is easily moved because of the wheels.

Science News Letter, October 27, 1951

❁ **EDUCATIONAL CARDIOSCOPE**, which looks like a tall, thin television set, permits heart sound waves to be projected directly on a screen. It is for use in teaching beginners how to diagnose various heart sounds. Plugged-in stethoscopes pick up sounds accompanying the screen images.

Science News Letter, October 27, 1951

❁ **TWIN-BEAM FLASHLIGHT** has two bulbs with separate lenses that can be lighted together or singly with the flip of a switch. Both bulbs of this recently patented device are energized by the same battery. One advantage is its ability to give light of two different intensities.

Science News Letter, October 27, 1951

❁ **COMBINATION TOOL**, a hand-held device operated by electric current, may be used for metal sawing, filing, sanding and as a drill. Operation tools are easily attached or detached in a chuck. A flip of a button converts the device from sawing to drilling action.

Science News Letter, October 27, 1951

Do You Know?

A forerunner of today's popular ice cream was enjoyed by Nero, the Roman emperor; it was made of mountain snow flavored with nectars, fruit juices and honey.

Packaged potato chips remain tasty longer if packets of silica gel and activated carbon are included in the package; the gel takes up moisture and the carbon unpleasant odors.

A plentiful Brazilian shrub, which looks like a stunted coffee tree, has leaves containing lemon oil of potential market value; little recovery is now made.

Mechanical damage, not decay, is the principal reason that railroad ties have to be removed.

Cattle with pinkeye, with both eyes affected, have been known to starve because they could not see well enough to find food.

About one-third the copper used in the United States is supplied by Chile.

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